

EMERGENCY CASEBOOK

Not fun in the sun: playground safety in a heatwave

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Two patients with severe palmar burns sustained from hot playground equipment during a heatwave are presented here, with a review of the management of palmar burn injuries.

Temperatures reached record highs for the month of July 2006. We describe two patients who presented to the Birmingham Children's Hospital Emergency Department, Birmingham, UK, with burns sustained from contact with hot playground equipment. Contact burns are commonplace at home,¹ but unexpected hazards can occur in places usually assumed safe. We hope to increase public awareness regarding this uncommon but preventable serious injury.

PATIENT 1

A 19-month-old girl was transferred by ambulance to the emergency department after an alert call from ambulance control, with burns to both hands, knees and the anterior abdominal wall. She had been playing in a local park where a "quarter-pipe" steel skateboarding ramp was located in direct sunlight. The girl ran on to the ramp's slope and put both hands and knees down on the surface, and instantly became distressed. She sustained burns to her palms, knees and abdominal wall. These were immediately irrigated with a 500-ml bottle of water, and gel pack dressings were applied at the scene by the ambulance crew.

On arrival at the emergency department, she was extremely distressed and analgesia in the form of paracetamol, ibuprofen and oramorph (morphine) was administered. On examination, the following injuries were noted:

1. *Right hand*—mid to deep dermal burns (deep partial thickness) with skin loss to the entire surface of the palm, blistering of all five digits, diminished sensation but sensate, with capillary refill of 3–4 s (fig 1).
2. *Left hand*—large blister (deroofed) involving the entire palm, multiple blisters to all fingers, very similar in appearance to burns in the right hand.
3. *Right knee*—5×5 cm area erythema with skin loss in the central 3×3 cm area, superficial partial thickness burn.
4. *Left knee*—5×12 cm area erythema with blistering and skin loss centrally, superficial partial thickness.
5. *Abdomen*—1×8 cm area erythema with small area blistering, partial thickness.

The total burn area was estimated to be 3–4%. Urgotul dressings were applied to the burns in the leg and abdominal wall. The child was referred to the on-call plastic surgical registrar in view of the deep dermal burns to the hand, and was subsequently discharged with pain relief. The following day, she presented with diarrhoea and remained an inpatient for 4 days. She has since made steady progress, and the burns are healing well. The palmar burns to both hands were treated with Acticoat dressings and are expected to heal without skin grafting.

PATIENT 2

A 23-month-old boy ran on to the same metal ramp within a few days after patient 1. He sustained burns to both hands and his right knee, which were immediately bathed in water. He attended his local accident and emergency department, and the burns were dressed with Bactigras. He was assessed by the plastic surgery team at Birmingham Children's Hospital, and the following injuries were documented:

- *Right hand*—mid to deep dermal burn involving 70% palmar skin, fingers spared.
- *Left hand*—mid dermal burn affecting 40% of the palmar area, fingers spared.
- *Right knee*—3×2 cm area burn to the anterior aspect right knee, <1 cm centrally deep dermal

The total area burnt was approximately 1%. The burns were subsequently dressed with Acticoat. After 10 days, all areas were found to be clean, epithelialised and healing well.

DISCUSSION

Burns from contact with hot domestic surfaces are a common cause of emergency attendances, with most involving the palmar surface.¹ However, we could find no case reports of burns from hot playground equipment in the literature.

Palmar skin is thicker and more resistant to thermal injury than other skin areas.² Although burns to the palm from hot surfaces can cause serious morbidity, the majority are relatively benign, with a low incidence of late sequelae.³ With adequate pain relief and wound care, they can usually be managed on an outpatient basis.³ The best predictor of outcome is wound-healing time. Wounds that take >21 days to heal are likely to develop hypertrophic scarring and contractures.^{3,4} The palmar



Figure 1 Photograph of the right palm 1 hour following burn injury. Parental/guardian informed consent was obtained for publication of this figure.

area is very difficult to resurface with a skin graft if full thickness burns do occur,³ and is associated with problems such as contractures, pigmented skin from a skin graft and occasionally hair growth if the donor skin is taken from a hair-bearing region. Plantar skin graft from the feet has the potential to avoid all these problems in experienced hands.

In the summer months, when metal swings, slides, roundabouts and other playground equipment are in direct sunlight, they can reach temperatures high enough to cause burns. We support the introduction of clearly visible warning signs in public playgrounds, highlighting the potential dangers. Ideally this equipment should be placed in the shade, made of alternative materials to metal and, where painted, painted with light colours that can help in further reducing heat absorption. We must also focus on increasing public awareness regarding preventable injuries.

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